

What is claimed is:

1. A vector for preparing a vaccine which contains one or more than two gene among pgs B, pgs C and pgs A encoding poly- γ -glutamate synthetase complex and an antigen protein gene of human papilloma virus:
5
2. The vector for preparing a vaccine according to claim 1, in which said antigen protein gene is one or more than two genes selected from a group comprising capsid HPV L1 and HPV L2 of human papilloma virus.
10
3. The vector for preparing a vaccine according to claim 1, in which said antigen protein gene is one or more than two genes selected from a group comprising HPV E6 and HPV E7 antigen protein associated with a tumor induction.
15
4. The vector for preparing a vaccine according to claim 1, in which pgs A gene encoding said poly- γ -glutamate synthetase complex is contained.
5. A Gram negative microbe which is transformed with the vector for
20 preparing a vaccine of claim 1.
6. The microbe according to claim 5, in which said microbe is selected from a group comprising *Escherichia coli*, *Salmonella typhi*, *Salmonella typhimurium*, *Mycobacterium bovis*, and *Shigella*.

7. A Gram positive microbe which is transformed with the vector for preparing a vaccine of claim 1.
8. The microbe according to claim 7, in which said microbe is selected
5 from a group comprising *Bacillus*, *Lactobacillus*, *Lactococcus*,
Staphylococcus, *Lysteria*, *Monocytogenesis*, and *Streptococcus*.
9. A vaccine for treating or preventing mucosal tumor which contains as
an effective component, the microbes of claim 5 and claim 7 expressing an
10 antigen protein onto a cell surface, crude antigen proteins extract from said
microbes or antigen proteins purified from said microbes.
10. The vaccine for treating or preventing mucosal tumor according to
claim 9, which can be administered orally or be edible.
- 15
11. The vaccine for treating or preventing mucus tumor according to
claim 9, which can be injected subcutaneously or peritoneally.
12. The vaccine for treating or preventing mucosal tumor according to
20 claim 9, which can be sprayed to the nasal cavity.
13. The vector for preparing a vaccine according to claim 1, which has
the genetic map as illustrated in Fig. 1 and is named as pHCE2LB:pgsA-HPV
L1

14. The vector for preparing a vaccine according to claim 1, which has the genetic map as illustrated in Fig. 5 and is named as pHCE2LB:pgsBCA-HPV E7.

5 15. A microbe which is transformed with the vector for preparing a vaccine of claim 13 or claim 14.

16. The microbe according to claim 15, in which *Lactobacillus* or *Salmonella* is used as a host cell.

10

17. The *Escherichia coli* transformant which is transformed with the vector of claim 13 (accession number: KCTC 10349 BP)

18. The *Escherichia coli* transformant which is transformed with the
15 vector of claim 13 (accession number: KCTC 10520 BP)

19. A vaccine for treating or preventing mucosal tumor which includes as an effective component, the microbes of claim 16 expressing an antigen protein onto a cell surface, crude antigen proteins extract from said microbes
20 or antigen proteins purified from said microbes.

20. The vaccine for treating or preventing mucosal tumor according to claim 19, which can be administered orally or be edible.

21. The vaccine for treating or preventing mucosal tumor according to claim 19, which can be injected subcutaneously or peritoneally.

22. The vaccine for treating or preventing mucosal tumor according to
5 claim 19, which can be sprayed to the nasal cavity.

23. A washing solution for a genital organ, which includes as an effective component, the microbes of claim 16 expressing an antigen protein onto a cell surface, crude antigen protein extract from said microbes or antigen
10 proteins purified from said microbes.